NEES System Evaluation of FERC's Seven Factor Test

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I. Executive Summary

In its Order Number 888, the Federal Energy Regulatory Commission (FERC or Commission) proposed a seven factor test to delineate the jurisdictional line between transmission facilities subject to FERC's jurisdiction and distribution facilities subject to state rate-making authority. FERC has exercised exclusive authority over all transmission and distribution facilities for wholesale wheeling and the transmission component of unbundled interstate retail wheeling. The seven-factor test is designed to identify the characteristics of local distribution systems that differentiate them from transmission systems. The seven-part test proposed by the Commission, is flexible and based on the actual use of the distribution and transmission system. The application of the test depends on the facts of each case.

The corporate structure of the New England Electric System Companies (NEES) separates transmission or distribution facilities into different subsidiaries in a way that parallels the FERC's seven-factor test. The individual subsidiaries within NEES are segregated by function, and not vertically integrated, as is the standard organization of most electric utilities. Wholesale services, primarily generation and transmission functions, are under one subsidiary, New England Power Company(NEP). Retail distribution functions are under separate retail subsidiaries, Massachusetts Electric Company, Granite State Electric Company and The Narragansett Electric Company.[1] This unique structuring of the subsidiary utilities is consistent with FERC's definition of wholesale transmission and local distribution.

Based on the analysis in this report, the NEES Companies conclude that their subsidiaries are structured according to the Commission's definition of transmission and local distribution

[1] The Narragansett Electric Company also owns transmission facilities, but these transmission facilities (together with a much smaller portion of Massachusetts Electric facilities) are operated by NEP under a generation and transmission (G&T) agreement that is subject to FERC's jurisdiction. Thus, even while ownership is not separate, the system is functionally unbundled.

facilities. NEP, as the generation and transmission provider, fits the FERC definition of transmission based on its customers, voltage class and system type. Additionally, the distribution facilities of the NEES retail subsidiaries which are subject to state rate making jurisdiction today fit the seven-part test established by FERC for the definition of local distribution facilities used for retail access in a restructured industry.

II. Overview of Federal and State Jurisdictional Requirements per FERC Order 888

In its Order Number 888, the Federal Energy Regulatory Commission (Commission) addresses the issue of Federal and State jurisdiction over retail transmission by defining what constitutes local distribution. The Commission exercised exclusive jurisdiction over unbundled transmission in interstate commerce used by public utilities for retail wheeling up to the point of local distribution.[2] To determine the jurisdictional line for retail access purposes, the Commission proposed the seven factor test of local distribution. This test of functional and technical characteristics of facilities would define local distribution facilities and thus would demarcate the line between federal and state jurisdiction.

Under Order 888, the Commission will defer jurisdiction over local distribution facilities to state commissions if the state commission applies the seven criteria set forth in Order 888. Accordingly, this report is prepared for use before the state commissions in Massachusetts, New Hampshire, and Rhode Island, as well as FERC, when evaluating the jurisdictional separation between transmission and distribution facilities. A consistent separation for each state will prevent gaps or overlaps in rate making and will protect against cross subsidies among customers that could otherwise occur if the states adopted different dividing lines between transmission and distribution plant.

[2]In addition, the Commission exercised exclusive jurisdiction over all facilities, whether transmission or distribution, used for wholesale wheeling.

III. Summary of NEES System Structure

The NEES System has a unique structure. Most utilities are vertically integrated, and a single corporate entity owns the utility's generation, transmission, and distribution assets. However, the NEES system is organized differently along functional lines. New England Power Company (NEP), a separate subsidiary of the NEES system, owns or operates through an integrated facilities agreement, all of the system's generation and transmission assets and has contracted for all of the system's power purchases and transmission support obligations.[3] The NEES retail companies, Massachusetts Electric, Granite State Electric, and The Narragansett Electric Company obtain the power supplies they need to serve the retail customers in their service territories, as well as the transmission service to deliver that generation to their distribution system through NEP under NEP's FERC Electric Tariff, Original Volume Number 1 (Tariff 1). The NEES retail companies separately own all of the distribution facilities needed to serve retail customers in their individual service territory.[4]

Thus, within NEES, transmission and distribution are generally owned by separate corporations. In those instances where ownership is not separated, control and ratemaking authority over assets have been established through a FERC-jurisdictional integrated facilities agreement (G&T Agreement) between NEP and the distribution companies under Tariff 1. This G&T agreement has been particularly significant for Narragansett Electric which owns all of the transmission assets and some generation assets in Rhode Island. In addition, the G&T Agreement has played a much smaller role for Massachusetts Electric which owns a relatively

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[3] This is true with the exception of certain Qualifying Facilities (QF's) with capacity less than 1 megawatt, the output of which are purchased directly by the NEES retail companies under PURPA guidelines in each of the respective states in which the NEES retail companies operate.

[4] NEP owns a very limited number of distribution facilities in Massachusetts Electric's service area. These lines are supported by Mass. Electric under its integrated facilities agreement with NEP.

small number of transmission assets in Massachusetts and for NEP which owns a very small portion of the distribution assets in Massachusetts. In all of these instances, the generation and transmission assets are controlled and operated by NEP, and the distribution assets are controlled and operated by Massachusetts Electric Company pursuant to an integrated facilities G&T Agreement between NEP and of the retail affiliates. Narragansett and Massachusetts Electric receive credits against their purchased power bills from NEP to compensate them for the costs of their transmission and generation facilities. Likewise, NEP receives compensation through the integrated facilities agreement from Massachusetts Electric for its use of the NEP owned distribution facilities.

Under the disaggregated structure of the NEES system, the costs of NEP's wholesale power supply and transmission investments and commitments are reflected in NEP's rates. NEP's rates also recover the costs associated with distribution facilities used for wholesale services. When NEP uses specific distribution facilities over which wholesale services occur to municipal wholesale customers or generators selling at wholesale, NEP compensates Massachusetts Electric under the integrated facilities contract for use for those distribution facilities. As part of the G&T Agreement, these facilities are also under FERC jurisdiction. Thus, the rate recovery of investments and commitments for all wholesale wheeling are determined by the Federal Energy Regulatory Commission. In contrast, State Commissions address directly the distribution costs and other costs associated directly with retail service.

IV. Definition of NEES Retail Companies Distribution System

The local distribution systems of the NEES Retail Companies are typically 5, 15, 25 or 35 kV voltage class systems. These systems are radial in nature, serving retail load in the vicinity of the local distribution facilities. The local distribution systems are typically supplied from the 115 or 69 kV transmission system through one or more step-down transformers own or controlled by NEP. Metering that measures the total kilowatt hours flowing into each local distribution area of the NEES retail companies at each delivery point is at the transmission/distribution interface, typically on the low voltage side of the step-down transformers.

Attachment 1 shows two types of common distribution systems for the NEES retail companies. Both are served from a transmission line, typically 69 kV or higher, through one or more step-down transformers. Type I distribution systems usually are comprised of 5, 15 or 35 kV voltage class feeders which serve retail customers directly through their service transformers. Several distribution feeders could emanate radially from each distribution substation. Type II distribution systems are generally 15, 25 or 35 kV voltage class distribution systems which serve some customers directly through the customer's service transformer and serve other customers through step-down transformers to a Type I distribution system which has 5 or 15 kV voltage class distribution feeders.

Both Type I and II distribution systems are radial in nature. Although power may be supplied from more than one transmission/distribution interface, power flow is always into the geographic area served by the distribution facilities. Distribution facilities are not used to transmit bulk power from one geographic area to another; the power is consumed within the distribution service area. The distribution circuit often terminates at an open switch to tie with an adjacent circuit for reliability and maintenance purposes; opening or closing tie points on the distribution system has no affect on the integrity or reliability of the bulk transmission system. Switching of

distribution tie points may be manual or automatic and is done to restore service to customers in the event of an outage or to perform maintenance on equipment.

Attachment 2 is a list of the NEES System transmission/distribution supply points. This attachment identifies each supply point by name, delivery pressure kV, and the type of distribution system supplied from that location. The distribution systems of the NEES retail companies meet the seven part test for distribution systems as described below.

(1) Local distribution facilities are normally in close proximity to retail customers.

NEES retail companies' distribution facilities are in close proximity to retail customers, as these are the circuits that emanate from local distribution substations and serve customers in a limited geographical area. These circuits typically are installed along public roads and private rights-of-way and serve adjacent customers.

Attachment 3 shows an example of a Type I distribution system which has two distribution feeders, 507L1 and 507L2, which serve customers in the town of Wilbraham. These two distribution feeders are tied to adjacent feeders 524L1 and 524L2 via open switches. Type II distribution systems generally cover a larger area than Type I distribution systems, but are still local in nature. Attachment 4, page 1 of 2, shows an example of a Type II distribution system made up of the 2367, 2373, 2377 and 2396 lines out of King Street Substation. This distribution system serves customers either directly or via Type I distribution systems in the towns of Merrimac, Amesbury, Salisbury, West Newbury, Newburyport, Newbury and Georgetown as shown in Attachment 4, page 2 of 2.

(2) Local distribution facilities are primarily radial in character.

The distribution facilities of the NEES retail companies are primarily radial in character, and serve a limited area from one or more transmission supply points**.** These facilities typically benefit the local area, and do not affect the operation or integrity of the transmission system other than as local load delivery points.

Type I distribution circuits are always radial, but may have normally open ties with similar circuits. Attachment 5 shows three radial distribution circuits, designated 527L1, 509L1 and 509L2, which serve the towns of Granby and Belchertown, MA. These circuits are connected by normally open switches at several locations. These tie points are usually manually operated and may be used to restore service to customers in the event of an outage or to perform maintenance on equipment.

Type II circuits are also radial, but may occasionally have more than one source into the distribution system. Attachment 6 (page 1of 3) is an example where the distribution system is supplied from the transmission system at both Ward Hill #43 and at West Methuen #63 substations. Power would always flow into this system fromWard Hill and West Methuen; opening the 23 kV circuit ties would have no impact on the transmission system.

(3) Power flows into local distribution systems; it rarely, if ever, flows out.

Power flow is into a local distribution system, and is metered at the transmission/distribution

interface. More than one supply point may exist as previously described in item (2) above and shown in Attachment 6, page 1 of 3. Because these systems are radial in nature, the net power flow will be into the system to serve the local load. Pages 2 and 3 of Attachment 6 show the billing metering facilities at Ward Hill and West Methuen, respectively. Refer to Attachment 18 for a description of symbols and designations used on billing meter layouts.

If generation exists on the distribution system, separate billing metering facilities would be located at the local generation facility to segregate wholesale services from local distribution deliveries. Attachment 7 and 8 show examples where a wholesale transaction from generation resides on a 23 kV distribution facility which also provides service to retail customers. In Attachment 7, the Ogden Martin generation facility in Haverhill resides on a 23 kV system in Massachusetts. In Attachment 8, Pawtucket Power Associates generation facility resides on a 23 kV distribution facility in Rhode Island.

(4) When power enters a local distribution system, it is not reconsigned or transported on to some other market.

NEES retail companies' distribution systems serve retail end-use customers. In cases where distribution facilities are also used to serve wholesale customers, that portion of the cost of those facilities used for wholesale services would be assigned to the wholesale transaction. Separate metering is located at the wholesale customer to segregate wholesale deliveries from local distribution deliveries. Attachment 4, page 1, shows an example where the wholesale customer, Merrimac Municipal, is served from the 2377 line; a 23 kV distribution facility. The 2377 line also serves retail end-use customers in the Amesbury/Salisbury area. Metering facilities for Merrimac Municipal are shown in Attachment 9. The cost of the portion of those facilities used

to serve Merrimac Municipal is assigned to the wholesale transaction.

Attachment 6, page 1 shows an example where one NEES retail company, Massachusetts Electric, is supplying another NEES retail company, Granite State Electric, from 23 kV facilities. The Massachusetts Electric facilities are at Methuen Junction. Attachment 10 shows the metering on the 2376 and 2352 circuits which serve Granite State Electric's Barron Ave., Old Trolley, and Salem Depot distribution substations in New Hampshire. In this case, the cost of the portion of the facilities used for wholesale services to Granite State Electric is assigned to the wholesale transaction.

(5) Power entering a local distribution system is consumed in a comparatively restricted geographical area.

NEES retail companies' distribution systems serve load in a comparatively restricted geographical area. The geographical area served by a local distribution system depends on the load density of the area. For example, several Type I or Type II distribution circuits as shown in Attachment 1 may serve a large city or a number of rural towns.

Attachment 11, pages 1 and 2, show the area map and electrical one line diagram for eight distribution feeders which serve the towns of Northampton, Williamsburg and Goshen. This represents how a typical Type I distribution system of the NEES retail companies serves a restricted geographic area.

Attachment 4, page 1, shows the electrical one line diagram for the Type II distribution system

served from the King Street #18 Substation. The four distribution circuits 2367, 2373, 2377 and 2396 serve the limited geographic area shown on Attachment 4, page 2.

Attachment 12 shows an example of where the distribution system is supplied from the transmission system at Drumrock Substation. In this example, both Type I and Type II distribution systems are being served from one transmission /distribution interface. The Type I distribution system is a 12.47 kV system serving a restricted geographic area. The Type II distribution system is served of the 23 kV circuit serving a completely separate geographic area than the Type I 12.47 kV system.

(6) Meters are based at the transmission/distribution interface to measure flows into the local distribution system.

Metering to measure flows into the local distribution systems of the NEES retail companies is based at the transmission/distribution interface, typically on the low voltage side of the stepdown transformer.

Attachment 6, pages 2 and 3, show billing metering installations at Ward Hill and West Methuen substations from the 115 kV system. Attachment 13 shows similar billing metering at the Pondville No. 26 substation on the 13.8 kV side of the 69/13.8 kV transformers supplied from the 69 kV transmission lines designated E5 and F6. Attachment 14 shows the billing metering at the King Street #18 Substation for the distribution system shown schematically in Attachment 4, Page 1, on the 23kV side of the 115/23 kV transformers supplied from the 115 kV transmission lines designated C-155N and B-154N.

(7) Local distribution systems will be of reduced voltage.

The local distribution voltages of the NEES retail companies are less than 69 kV. Typical voltage classes used are 5**,** 15, 25 and 35 kV. Attachment 15 shows the actual distribution voltages and the letter designations used by the NEES retail companies to identify Type I distribution. Type II distribution circuit voltages are 13.8, 23 or 34.5 kV.

V. Definition of NEES Transmission System

The function of transmission facilities is to integrate generation resources over large geographical areas and deliver the needed power to local distribution supply systems. The NEES transmission system is used to transmit power from generation resources located on its system or on the transmission systems of other utilities to the loads served by the distribution system. By definition, a transmission system is always interconnected to the neighboring transmission systems of neighboring utilities. Transmission lines are rarely, if ever, directly connected to retail customers, and with few a exceptions, the NEES companies transmission system is a 69 kV or greater class system.

There are two instances where the NEP transmission system is of lower voltage. First, if a lower voltage system is used to integrate generation resources and interconnected utilities, as it does at 34.5 kV in the Comerford/Moore area shown in Attachment 16, this is defined as transmission. Second, if a low voltage system is used to interconnect two utilities as does the 34.5 kV system in the Comerford/Moore area and the 46kV system in the Bellows Fall/Charlestown area (Attachment 15), this is also defined as transmission.

ATTACHMENTS

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